

# Haiyu WANG (汪海玉)

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## Education

- M.ENG. The University of Tokyo**, Electrical Engineering and Information Systems (On Going)    Oct 2024 - Aug 2026
- **Research Area:** Flexible Electronics, Signal Processing, Meta-Surface
- B.ENG. Southern University of Science and Technology**, Communication Engineering    Sept 2020 - May 2024
- **Overall GPA:** 3.68/4.0    **Major GPA:** 3.84/4.0
  - **Honors:** Excellent Graduates (10%), Merit Student Scholarship (15%) for 3 years
  - **Research Area:** Signal Processing, Wireless Communication, Radio-Frequency Identification (RFID), Integrated Sensing and Communication (ISAC)
  - **Courses:** Please refer to the [official transcript](#) 🔗

## Publications

- Welded Workpiece Image Acquisition System**    Jun 2024  
*Haiyu WANG*  
[CN221210339U](#), Utility Model Patent, China 🔗
- Passive Respiration Detection via mmWave Communication Signal under Interference**    Apr 2024  
Kehan WU\*, Renqi CHEN\*, *Haiyu WANG*, Chenqing JI, Jiayuan ZHU, Guang WU  
[2024 IEEE Wireless Communications and Networking Conference \(WCNC\)](#) 🔗
- Implementation of Anti-quantum Communication System using Software-Defined Radio**    Jan 2023  
Hongjia YANG, Jiarui XU, *Haiyu WANG*, Chaofan WEN, Guang WU  
[2023 IEEE International Conference on Consumer Electronics \(ICCE\)](#) 🔗

## Projects

- Non-destructive Detection of Tree Internal Structure Based on RFID**    Graduation Project  
Distinguished Undergraduate Thesis Award (Top 10%)
- Developed a rapid, low-cost, non-destructive system for detecting internal structures of trees using RFID technology, addressing a key challenge in ecological conservation.
  - Built a hardware prototype and automated data processing scripts, achieving detection within 1 minute.
  - Expanded application to agarwood trees with machine learning algorithm, and optimized internal structure detection accuracy to 94%.
- Gesture Recognition for Human-Computer Interaction (HCI)**    C/C++ Program Design  
Score: 96 [\[Github\]](#) 🔗
- Developed a gesture recognition system using OpenCV based on convex hull detection.
  - Achieved efficient human-computer interaction such as cursor control and some shortcuts.
  - Tools Used: C++, OpenCV
- Simulation of Cell Life with Quadtree Structure**    Data Structure and Algorithm  
Score: 100 [\[Github\]](#) 🔗
- Simulated the cellular life using Quadtree algorithms, balancing the addition, search, and deletion of cells. And different kinds of cells are different in size, color and moving patterns, and their behaviors will be influenced by their surroundings.
  - Optimized the simulation of 10,000 cells to run at 15fps without graphics and 3,000 cells at 15 fps with a full real-time GUI.
  - Tools Used: JAVA
- Laser Keyboard**    Analog Circuits Laboratory  
Score: 98 [\[Github\]](#) 🔗
- Designed a usable and portable laser keyboard prototype that can project a keyboard layout on any flat surface.
  - Utilized OpenCV to detect finger localization for interaction based on contour detection.
  - Tools Used: Python, OpenCV

## Experience

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**City University of Hong Kong, Dept. of Biomedical Engineering**, Research Assistant

Hong Kong, China

- Participated in the research of wireless gesture recognition with RFID tattoo.

Jul 2023 - Aug 2023

**Chengdu Neton Inc.**, Remote R&D Intern

Chengdu, China

- Research and development of automatic measurement system for penetration.
- Measured and recorded the penetration during laser welding process by Computer Vision (OpenCV, Python).
- Achieved a satisfying detection precision with test samples. The outcomes met the requirement of my employer.
- A related utility model patent is granted, and an invention patent is pending.

Mar 2023 - Jun 2023

## Technologies


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**Languages:** Python(4 years), JAVA (4 years), MATLAB ( 3 years), C/C++ (2 years)

**Tools:** LabVIEW (2 years), ANSYS Electronics Desktop (1 year), Blender (half a year)

## Additional Information

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- Teaching assistant of course *Fundamentals of Electric Circuits* in 2022.
- Invited to give review lessons on *Analog Circuits*, *Communication Principles*, and *Engineering Mathematics*. Recordings have got over 1000+ views on my personal [Bilibili channel](#) .